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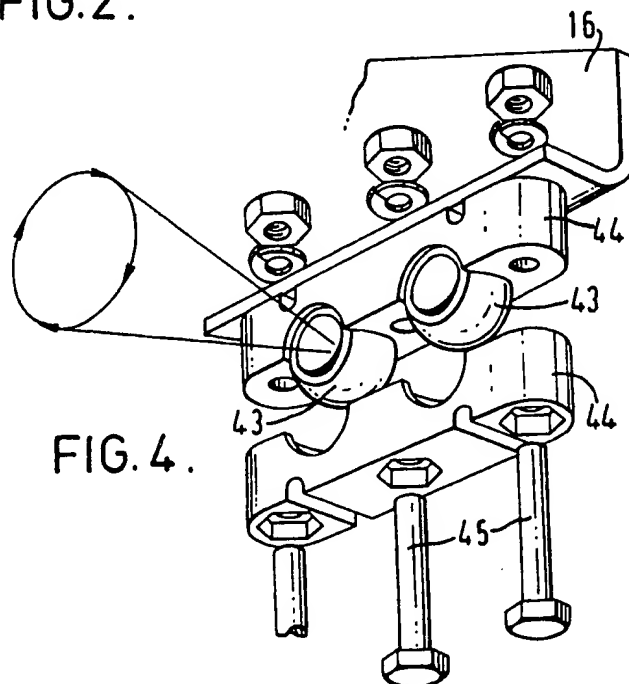
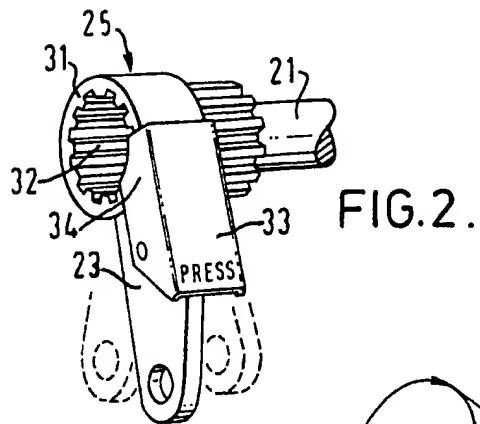
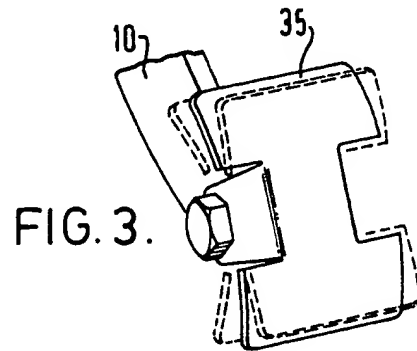
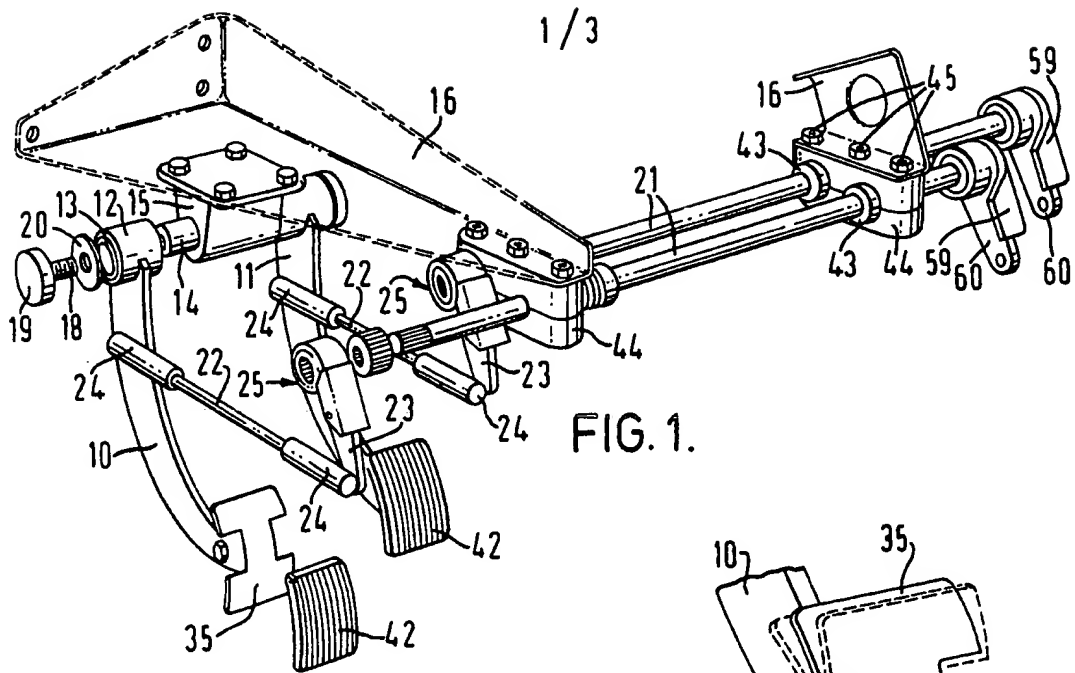
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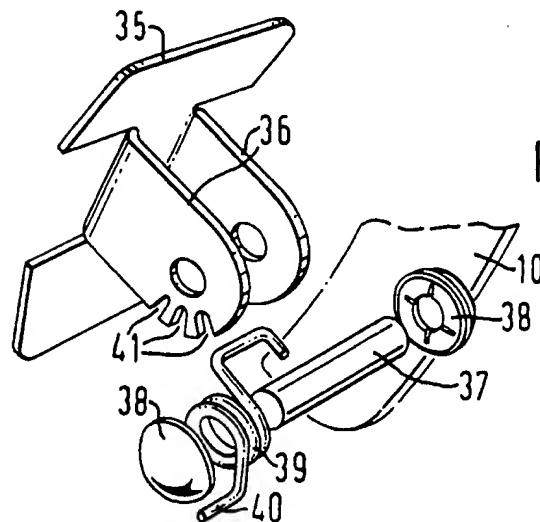
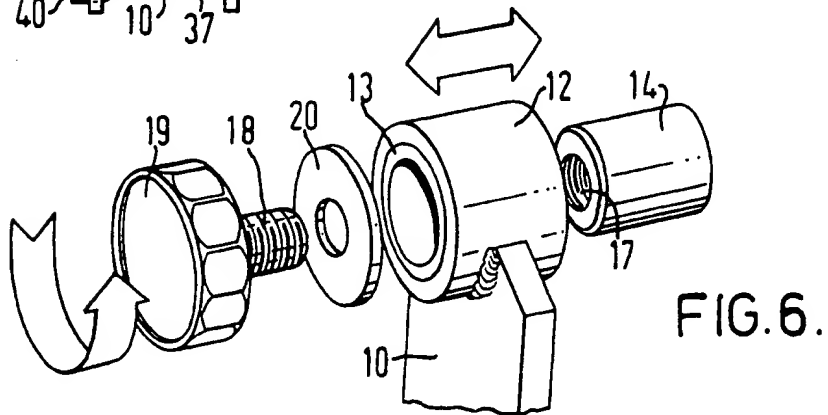
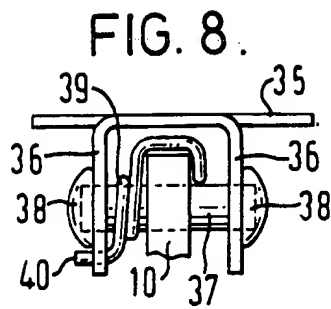
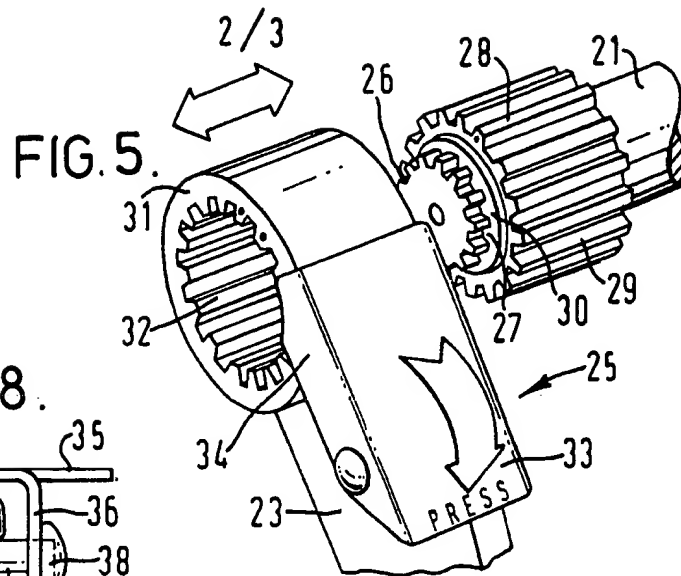
(12)

- (57) A dual pedal control apparatus for a vehicle in which each dual pedal (10, 11) is pivotably mounted on a shaft (14) and retained thereon by a manually rotatable bolt (18) so as to be easily detached and levers 23 connected by links (22) to the shafts (10, 11) are connected by a quick-release adjustable connection (25). The bolts (18) and connections (25) enable the dual pedal levers (10, 11) to be easily removed when not required.

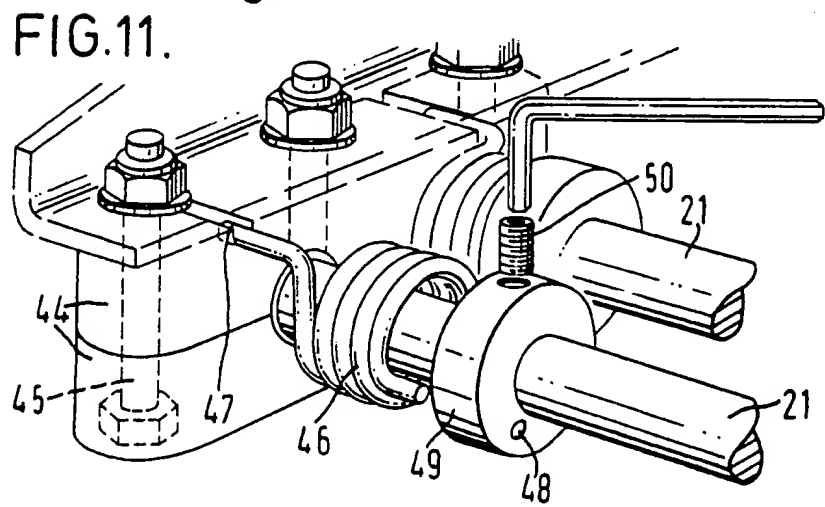
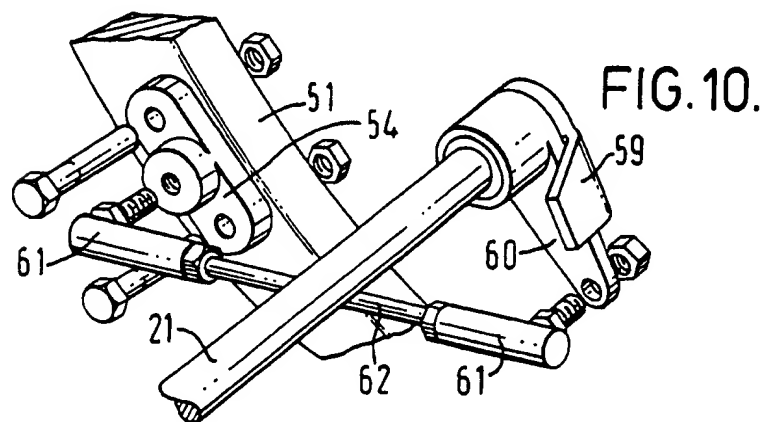
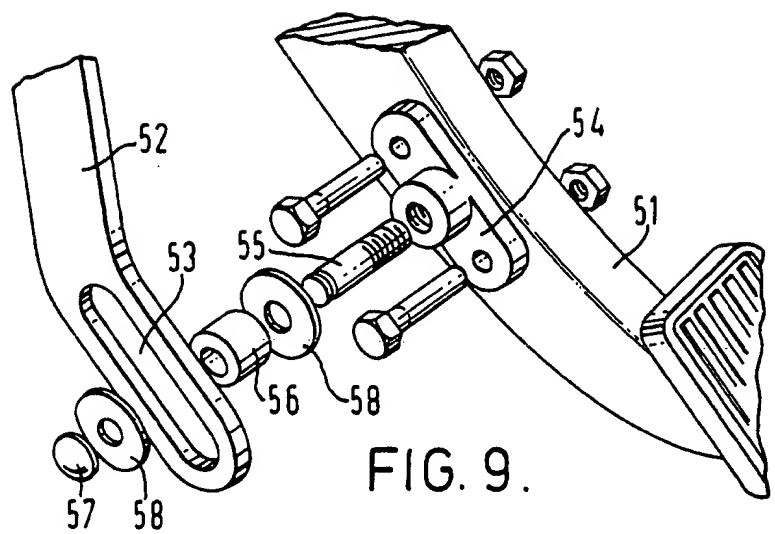


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SPECIFICATION

Dual pedal control apparatus for vehicles

5 This invention relates to a dual pedal control apparatus for vehicles and particularly, but not exclusively, to such apparatus for fitting to a motor vehicle in which driving tuition is carried out.

10 Dual pedal control apparatus is known in which the normal brake and clutch operating pedals of a motor vehicle can be over-ridden by a duplicate set of pedals operated by an instructor, the duplicate pedals each being
15 connected to a cross-shaft having means to engage the normal pedals but which enable the normal pedals to be operated normally by the driver.

When a vehicle fitted with dual pedal control apparatus is not being used for giving
20 driving tuition it is desirable that the duplicate pedals be removed. With the known dual pedal control apparatus the removal and refitting of the duplicate pedals is difficult and time consuming.

According to the present invention there is provided a dual pedal control apparatus for a vehicle in which the pedal levers are pivotally
25 mounted in a readily detachable manner and levers interconnecting the pedal levers to cross-shafts are connected to the respective cross-shaft by a quick-release adjustable connection.

Preferably the adjustable connection between a lever or pedal and a shaft comprises
35 axially extending teeth provided on the shaft, an intermediate collar having internal axially extending teeth engaged with the teeth on the shaft and external axially extending teeth, the number of external teeth being greater than
40 the number of internal teeth, retaining means for retaining the collar on the shaft, the lever or pedal being provided with an end portion provided with internal teeth engaged with the external teeth on the collar, and resiliently
45 loaded means being provided on the lever or pedal for retaining the end portion of the lever or pedal on the collar.

An embodiment of the invention will now be described, by way of an example, with
50 reference to the accompanying drawings, in which:—

Figure 1 is a perspective view of a dual pedal control apparatus according to the present invention,

Figure 2 is a perspective view of the connection between a lever and a cross-shaft,

Figure 3 is a perspective view of the pad of a pedal lever,

Figure 4 is a perspective view of a bearing support for the cross-shafts,

Figure 5 is a further perspective view of the connection between a lever and a cross-shaft,

Figure 6 is a perspective view showing the connection of a pedal lever to its pivot shaft,

Figure 7 is a perspective view showing the parts for connecting the pad to a pedal lever,

Figure 8 is an end view of a pad connected to a pedal lever,

70 *Figure 9* is a perspective view of an arrangement in which a slotted lever connected to a cross-shaft acts directly on a pedal lever of a vehicle,

Figure 10 is a perspective view of an arrangement in which the pedal lever of a vehicle is connected to a slave lever acted upon by an over-rider on a cross-shaft, and

Figure 11 is a perspective view of the return springs for the duplicate pedals.

80 The dual pedal control apparatus is shown generally in Fig. 1 and comprises a duplicate clutch operating pedal 10 and a duplicate brake operation pedal 11. The pedals 10 and 11 are each provided at one end with a
85 tubular portion 12 (Figs. 1 and 6) in which is received a bush 13. The bush 13 is slidably received on a pivot shaft 14 mounted in a member 15 fixed to a support bracket 16. The shaft 14 is provided at each end with a
90 screw-threaded bore 17 and the tubular portion 12 is retained on the shaft 14 by a retaining screw 18 which engages in the bore 17 and has a head portion 19 which can be manually grasped to tighten or unscrew the
95 screw 18. A washer 20 is interposed between the head 19 and the bush 13. It will be appreciated that each duplicate operating pedal 10, 11 can be easily detached from its shaft 14 by unscrewing the retaining screw
100 18 and moving the pedal sideways. Refitting of the pedals 10, 11 will be carried out in reverse sequence and then tightening each screw 18 by hand by means of the head 19.

The pedals 10 and 11 are each connected
105 to a respective cross-shaft 21 by links 22 and a lever 23. The links 22 are connected to their respective pedal 10, 11 and lever 23 by ball-joint connectors 24.

The levers 23 are each connected to their
110 respective cross-shaft 21 by means of a quick-release adjustable connector 25 which are shown in greater detail in Figs. 2 and 5. Each connector 25 consists of axial teeth 26 provided on the end portion of the respective
115 cross-shaft 21. Engaged with the teeth 26 are internal teeth 27 provided on a collar 28. The collar 28 has external teeth 29 and is retained on the cross-shaft 21 by a retaining circlip 30. The lever 23 is provided at one end with
120 a tubular portion 31 provided with internal teeth 32 which engage with the teeth 29. Pivotably connected to the lever 23 is a resiliently loaded locking latch 33 which has side wall portions 34 which engage with the
125 end surfaces of the collar 28 to retain the portion 31 on the collar 28. When the latch 33 is pivoted against the resilient loading in the direction of the arrow shown in Fig. 5 the latch 33 disengages the collar 28 allowing
130 lever 23 to be moved sideways to slide the

portion 31 off the collar 28.

Preferably the collar 28 has fourteen external teeth 29 and fifteen teeth 32 are provided on the portion 31. The collar 28 can be placed on the shaft 21 in fourteen different circumferential positions and because the lever has a greater number of teeth vernier adjustment of the lever 23 can be achieved to enable the exact pedal height to be achieved.

Each pedal 10, 11 is provided with a foot pad 35 shown in greater detail in Figs. 3, 7 and 8. The pedal 10, 11 is received between two portions 36 and a spindle 37 extends through the pedal 10, 11 and the portions 36, the spindle 37 being retained by retaining members 38. Mounted on the spindle 37 is a spring 39 having at one end a straight tag portion 40 which can be engaged in any one of three notches 41 provided in one of the portions 36, the other end of the spring 39 extending over the pedal 10, 11. Each foot pad 35 is covered by a cover member 42.

Each of the cross-shafts 21 are mounted in part-spherical bearing members 43 (Figs. 1 and 4) carried in split bearing supports 44 which are secured together by bolts 45 which also connect the supports 44 to the support brackets 16. The part-spherical bearing members 43 enable the shafts 21 to be aligned accurately and with a tolerance to accommodate for inaccuracies in the construction of the vehicle. As shown in Fig. 11 each shaft 21 is provided with a return spring 46 having one end received in a groove 47 provided on a support 44 and its other end engaged in a hole 48 provided in a collar 49 fixed to the shaft 21 by a grub-screw 50.

Each shaft 21 can be interconnected with a normal operating pedal 51 of a vehicle by a lever 52 provided with slot 53 as shown in Fig. 9. With such an arrangement the pedal 51 is provided with a plate 54 to which is fixed a spindle 55 on which is rotatably mounted a roller 56 which engages with the slot 53 and which is retained on the spindle 55 by a retaining member 57. Washers 58 are provided on each side of the roller 56.

Alternatively, as shown in Figs. 1 and 10 each shaft 21 can operate its associated normal operating pedal 51 by having an over-riding 59 fixed to the end of the shaft 21 which can engage a slave lever 60 rotatably mounted on the shaft 21, the lever 60 being connected by a ball connector 61 to a rod 62 connected by a ball connector 61 to the plate 54 of the pedal 51.

It will be appreciated that with the arrangement shown in the drawings the duplicate pedals 10, 11, links 22 and levers 23 can be easily and quickly removed when dual control of a vehicle is not required and easily replaced in position without the use of tools.

CLAIMS

1. A dual pedal control apparatus for a

vehicle, in which the pedal levers are pivotably mounted on a pivot shaft in a readily detachable manner and levers forming part of linkages interconnecting the pedal levers with cross-shafts are each connected to its respective cross-shaft by a quick-release adjustable connection.

2. A dual pedal control apparatus as claimed in claim 1, in which the adjustable connection comprises axially extending teeth provided on the respective cross-shaft, an intermediate collar having internal axially extending teeth engaged with the teeth on the cross-shaft and external axially extending teeth, the number of external teeth being greater than the number of internal teeth, retaining means for retaining the collar on the cross-shaft, said lever being provided with an end portion provided with internal teeth engaged with the external teeth on the collar, and resiliently loaded means being provided on the lever for retaining the end portion of the lever on the collar.

3. A dual pedal control apparatus as claimed in claim 2, in which said resiliently loaded means comprises a resiliently loaded latch pivotably connected to the lever, said latch having side wall portions which engage the end surfaces of the collar.

4. A dual pedal control apparatus as claimed in any preceding claim, in which links of the linkages are connected to their respective pedal and lever by ball-joint connectors.

5. A dual pedal control apparatus as claimed in any preceding claim, in which each cross-shaft is mounted in a part-spherical bearing member.

6. A dual pedal control apparatus as claimed in any preceding claim, in which each pedal lever is retained on the pivot shaft by means of a manually rotatable bolt in screw-threaded engagement with a longitudinal bore in said shaft.

7. A dual pedal control apparatus for a vehicle substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

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